ACCESSION NR: AP4038432

ture of CO and N_2. The square of the matrix element of the dipole moment of the electronic transition is determined from the measured integral absorption coefficients in the wavelength region 6,330--6,550 Å and is found to be 0.19 ± 0.09 atomic units. The ratio of the squares of the matrix elements for the violet and for the red bands is obtained from the integral intensities of the bands (1,0) of the red system and (0, 1) of the violet system of cyan, in the spectrum of an arc with carbon electrodes burning in air. Its value is found to be 1.9 ± 0.6. The value obtained for the square of the matrix element of the red dipole moment calculated from this ratio, and from the value obtained for the violet band earlier, agrees with the value obtained in the present work by measurements with the aid of a shock tube. The ratio does not agree with calculations by King and Swings (Astrophys. J. v. 101, 6, 1945) if allowance is made of the Franck-Condon factors. The reason for the discrepancy are discussed. "In conclusion the author is thankful to V. N. Kolesnikov for useful advice, A. T. Matachun and L. L. Sabsovich for solving the

Card 2/3

ACCESSION NR: AP4038432

gas dynamic problem on the M-20 computer, and G. I. Dronova for help in the reduction of the experimental data. Orig. art. has: 4 formulas, 2 tables, and 1 figure.

ASSOCIATION: Fizicheskiy institut im. P. N. Lebedeva Akademii nauk SSSR (Physics Institute, Academy of Sciences, SSSR)

SUBMITTED: 29Dec63 DATE ACQ: 09Jun64 ENCL: 00

SUB CODE: OP, ME NR REF SOV: 005 OTHER: 011

Card 3/3

ACCESSION NR: AP4017717 S/0294/63/001/003/0376/0385

AUTHORS: Kudryavtsev, Ye. M.; Gippius, Ye. F.; Derbeneva, S. S.; Pechenov, A. N.; Sobolev, N. N.

TITLE: Determination of the matrix element of the dipole moment of the electronic transition of the cyan violet band system. III

SOURCE: Teplofizika vy*sokikh temperatur, v. 1, no. 3, 1963, 376-385

TOPIC TAGS: cyan, cyan band system, cyan violet band system, dipole moment, matrix element, integral absorption exponent, internuclear distance, dissociation energy, electronic transition

ABSTRACT: This is a continuation of previously reported research (Teplofizika vy*sokikh temperatur v. 1, 73 and 218, 1963) and is devoted to the actual determination of the square of the matrix element of the dipole moment of the electronic transition $|R_e|^2$ from the measured integral absorption exponents of the rotational line of

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ACCESSION NR: AP4017717

the sequences $\Delta v = 0$ and $\Delta v = -1$ of the violet system of CN bands. The value obtained for the $|R_e|^2$ was found to be 0.38 atomic units and to be independent of the internuclear distance of the transitions. The over-all error in the measurements due to imperfections in the spectral instrument and failure to take complete account of the skirts of the lines is less than 10%, since the half-width of the rotational line exceeds or is equal to the half-width of the apparatus function under the experimental conditions. The value obtained for $|R_e|^2$ is in satisfactory agreement with the values obtained earlier by other methods. A value of 7.6 eV is obtained for the dissociation energy of CN from the present results and those by others. Orig. art. has: 6 figures, 7 formulas, and 3 tables.

ASSOCIATION: Fizicheskiy institut im. P. N. Lebedeva AN SSSR (Physics Institute, AN SSSR)

Card 2/4

KUDRYAVTSEV, Ye. M.; SOBOLEV, N.N.; TUNITSKIY, L.N.; FAYZULLOV, F.S.

Pyrometric study of the state of a gas behind a reflected shock wave. Trudy Fiz.inst. 18:159-200 '62. (MIRA 15:12)
(Pyrometry) (Shock waves) (Gas dynamics)

ACCESSION NR: AP4000402 S/0294/63/001/001/0073/0084

AUTHORS: Kudryavtsev, Ye. M.; Ginnius, Ye. F.; Pechenov, A. N.; Sobolev, N. N.

TITLE: Determination of the matrix element in the dipole moment of electron transfers in the cyanogen violet spectrum. Part 1

SOURCE: Teplofizika vy*sokikh temperatur, v. 1, no. 1, 1963, 73-84

TOPIC TAGS: cyanogen, carbon monoxide, nitrogen, shock wave, high temperature, radiative heat transfer, cyanogen spectrum, spectral line reversal, spectroscopy, supersonic aerodynamics, violet band, electron transfer, dipole moment, matrix element, absorption spectrum, radiative heat exchange, heat exchange, heat transfer, shock wave heating, shock tube, violet band system, reflected shock wave

ABSTRACT: In view of the uncertainty in the value of $|R_e|^2$ (the square of the electron transition dipole moment matrix element) for

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ACCESSION NR: AP4000402

the violet cyanogen spectrum, and in view of a recent development of a new method for determining this quantity in the Fizicheskiy institut im. P. N. Lebedeva AN SSSR (Physics Institute, AN SSSR) by measuring the absorption of light in gas behind a reflected shock wave, new measurements of $|R_e|^2$ have been set up by this method, with the CN radicals obtained by heating a mixture of CO and N_2 by a reflected shock wave. It was established that by transmitting pulsed light through a mixture of CO and N_2 heated to 5,000--7,000°K by the reflected shock wave, it is possible to register the absorption spectrum of the violet CN band system, and determine the value of $|R_e|^2$ of this system. To choose the optimal experimental condition and to obtain the data necessary for the data reduction, the states of the CO and N_2 mixture behind the reflected shock wave were calculated over a wide range of initial pressures (10--200 mm Hg) and of shock-wave velocities (2.0--5.6 km/sec). The temperature of the mixture

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was measured by a generalized method of inversion relative to the CN bands, which was also used to monitor the fact that the CN concentration is in equilibrium. The shock tube employed was described by the authors previously (Optika i spektroskopiya, v. 8, 585, 761, 1960). It is concluded that the most suitable conditions for the described experiment are those with $T_5 \geq 4800°K$ (i.e., p_1 = 100, 50, 25 mm Hg). The final results of the experiments will be reported in future articles. "In conclusion the authors are grateful to A. T. Matachun and L. L. Sabsovich for programming and solving the problem with the electronic computer, to A. A. Sapronov for developing the electronic apparatus, and to G. I. Dronova and I. M. Kholinov for help with the work." Orig. art. has: 9 figures, 2 formulas, and 1 table.

ASSOCIATION: Fizicheskiy institut im. P. N. Lebedeva AN SSSR (Physics Institute AN SSSR)

APPROVED FOR RELEASE: 07/12/2001 CIA-RDP86-00513R000827220008-2"

KAGAN, S.Z.; TRUKHANOV, V.G.; KOSTIN, P.A.; KUDRYAVTSEV, Ye.N.

Extraction of caprolactam from sulfate liquors in rotary disk extractors. Khim. prom. 41 no.3:184-186 Mr '65. (MIRA 18:7)

KAGAN, S.Z.; TRUKHANOV, V.G.; KOSTIN, P.A.; KUDRYAVTSEV, Ye.N.

Use of industrial rotary disk extractors for the two-stage extraction of caprolactame. Khim. prom. no.2:94-101 F '64. (MIRA 17:9)

KUDRYAVTSEV, YE.N.

2

33438

S/064/62/000/001/001/008
B110/B138

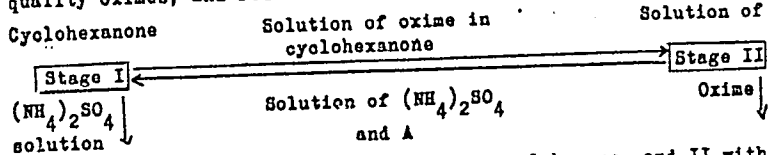
15.8080

AUTHORS: Kotlyar, I. B., Matveyeva, G. N., Smolyan, Z. S., Fogel', Ts. I., Gulyakov, V. M., Kudryavtsev, Ye. N.

TITLE: Continuous method of producing cyclohexanone oximes

PERIODICAL: Khimicheskaya promyshlennost', no. 1, 1962, 18 - 19

TEXT: A two-stage, continuous method of oxime production has been developed. Not only could it be automated, it also produces better quality oximes, and reduces losses of hydroxylamine hydrosulfate (A):



Reaction I is conducted with an excess of cyclohexane, and II with an excess of A. The formation of cyclohexanone oximes follows the reaction

Card 1/2

Continuous method of producing...

2 $\bigcirc^{=O}$ + $(NH_2OH)_2 \cdot H_2SO_4 \longrightarrow 2\ \bigcirc^{=NOH} + H_2SO_4 + H_2O$, with H_2SO_4 being neutralized by NH_3. Thus, the acidity indicates the stage of oxime formation. Preliminary experiments were carried out to determine τ, the contact period which must elapse before the acidity of the reacting mass becomes constant, and the percentage extraction of A as dependent on its concentration in the initial sulfate solution. Results: τ = 15 - 20 min; optimum A concentration ~20 g/liter. B and the stage II sulfate solution containing 20 - 25 g/liter of A pass continuously into oximator 1 (Fig. 1) of stage I. The resulting mixture is passed into 2, where it is neutralized with gaseous NH_3. The bottom layer in separator 3, spent sulfate solution, is passed into an evaporator, the upper one (oxime solution and B) into collector 4, and thence into stage II oximator 5, where it is mixed with a new A solution. NH_3 is used in the stage II neutralizer 6. The upper oxime layer in separator 7 passes to the next stage, and the sulfate solution passes via collector 8 into oximator 1. A stoichiometric ratio must be preserved between the fresh amounts of B and A fed into 1 and 5. There are 1 figure and 2 tables.

Card 2/2

KUDRYAVTSEV, Ye.P., inzhener.

Productivity indices of mechanical machining of engines and other piston machines. Vest.mash. 33 no.11:68-70 N '53. (MLRA 6:12)
(Gas and oil engines) (Metal cutting)

KUDRYAVTSEV, Ye.P. (Moskva)

Effect of shears and the inertia of rotation on bending vibrations of elastic rods. Izv.AN SSSR. Otd.tekh.nauk.Mekh.i mashinostr. no.5:156-159 S-O '60. (MIRA 13:9)
(Elastic rods and wires--Vibration)

L 29543-65 EWT(d)/EWT(l)/EWP(m)/EWT(m)/EWP(w)/EWA(d)/EWP(v)/EWP(k)/FCS(k)/
EWA(h)/EWA(l) Pd-1/Pf-4/Peb EM

ACCESSION NR: AP5005178 S/0179/64/000/006/0113/0116

31

AUTHOR: Kudryavtsev, Ye. P. (Moscow) B

TITLE: On oscillation of an infinitely long elastic cylindrical shell in a moving compressible gas stream

SOURCE: AN SSSR. Izvestiya. Mekhanika i mashinostroyeniye, no. 6, 1964, 113-116

TOPIC TAGS: elastic shell, elastic wave, gas flow, inviscid flow, critical velocity, oscillation equation, unstable flow

ABSTRACT: The oscillations of an infinite cylindrical shell in a moving gas stream enclosed in a coaxial solid cylindrical wall were studied analytically. The gas is assumed to be in potential flow, and the equations of thin, elastic shell moment theory are used. The simplified solution of the cylinder oscillations is given by $\Omega_1^2 - \Omega^2 - \frac{\rho R}{\rho_0 h}\alpha(\Omega - kU)^2 = 0$, where Ω = frequency (see Fig. 1 on the Enclosure). The gas flow perturbation equation is given in cylindrical coordinates with boundary conditions $\frac{\partial\varphi}{\partial r} = U\frac{\partial w}{\partial x} + \frac{\partial w}{\partial t}$

$\partial\varphi/\partial r = 0$. The speed of elastic wave propagation is defined by V_1 and

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L 29643-65

ACCESSION NR: AP5005178

the Mach number M_1 by $|U-V|/c_\infty$. Expressions are derived for the mass attachment coefficient α or

$$\frac{1}{\alpha}=\left|-n+\nu R\frac{(\chi\nu R/n)A_{n-1}+B_n}{(\chi\nu R/n)T_n+A_n}\right| \quad (M_1<1)$$

$$\frac{1}{\alpha}=\left|-n-\nu R\frac{(\chi\nu R/n)P_{n-1}+Q_n}{(\chi\nu R/n)H_n+P_n}\right| \quad (M_1>1).$$

For large wavelengths, α is given by $\alpha(\mu,n)=\frac{\rho_0 R^2}{\rho c_\infty^2}\frac{h}{R}\frac{\Omega_1^2(1-\omega_1^2)}{n^2M_1^2}$. It is shown that for finite thickness shells and sufficiently large clearances between the shell and the solid wall, the critical velocity for the onset of instability is given by J. W. Miles as $M_{c_1}=\frac{V_{c_1}}{c_\infty}=1$. Numerical results are obtained for values $0.001\leq h/R\leq 0.03$ and for relative radii $0.33\leq\chi\leq 0.99$; $1.01\leq\chi\leq 3$ in gas flow. Orig. art. has: 13 equations and 4 figures.

ASSOCIATION: none

SUBMITTED: 03Jul63 ENCL: 01 SUB CODE: AS,ME

NO REF SOV: 003 OTHER: 001

Card 2/3

L 29543-65

ACCESSION NR: AP5005178

ENCLOSURE: 01

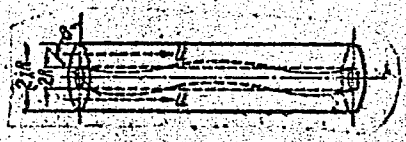

Fig. 1.

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KUDRYAVTSEV, Ye.P.

Laws of electro-osmotic stabilization of clayey soils. Trudy MMI no.28: 100-112 '56. (MLRA 10:6)
(Soil stabilization)

KUDRYAVTSEV, Ye. P. Cand Tech Sci -- (diss) "~~Application~~ Utilization of electroösmosis in the compression of clayey soils." Mos, 1957. 15 pp 20 cm. (Min of Higher Education. Mos Order of Lenin Power Engineering Inst im V. M. Molotov), 100 copies (KL, 7-57,106)

KUDRYAVTSEV, Ye.P.

Experimental investigation of clay-soil stabilization by means of direct electric current. Nauch.dokl.vys.shkoly; energ. no.3:27-36 '58. (MIRA 12:1)

1. Rekomendovano kafedroy osnovaniy, fundamentov i konstruktsiy Moskovskogo energeticheskogo instituta.
(Soil stabilization) (Electricity in agriculture)

KUDRYAVTSEV, Ye.P.

Axisymmetrical problem regarding electric stabilization of clay soils. Nauch.dokl.vys.shkoly; energ. no.2:199-209 '59. (MIRA 13:1)

1. Rekomendovana kafedroy osnovaniy, fundamentov i konstruktsiy Moskovskogo energeticheskogo instituta.
(Soil stabilization)

KUDRYAVTSEV, Ye.P.

Calculation of electric stabilization of clay soils. Nauch. dokl.vys.shkoly; energ. no.2:211-219 '59. (MIRA 13:1)

1. Moskovskiy energeticheskiy institut.
(Soil stabilization)

KUDRYAVTSEV, Ye.P., [illegible]

[illegible] l co[illegible]tion of clayey soils by [illegible] field. Izv. vys. ucheb. zav.; [illegible] (MIRA 14:2)

1. [illegible] ...ogicheskiy institut. Predstavlena [illegible] i [illegible].

(Soil stabilization)

S/879/62/000/000/042/088
D234/D308

AUTHOR: Kudryavtsev, Ye. P. (Moscow)

TITLE: Vibration spectra of elastic plates with rectangular horizontal section

SOURCE: Teoriya plastin i obolochek; trudy II Vsesoyuznoy konferentsii, L'vov, 15-21 sentyabrya 1961 g. Kiev, Izd-vo AN USSR, 1962, 267-269

TEXT: The author considers an isotropic plate having rectangular ribs along its edges. The rigidity and mass of the ribs are taken into account. With the aid of V. V. Bolotin's asymptotic method equations are obtained from which the wave numbers can be determined. There are 2 figures.

Card 1/1

KUDRYAVTSEV, Ye.P., kand.tekhn.nauk; SHARLOT, A.Ya., inzh.

Mechanical design of dischargers built in the form of a triangular prism. Elektrotekhnika 35 no.2:57-59 F '64. (MIRA 17:3)

KUDRYAVTSEV, Ye.P., kand. tekhn. nauk

Using the asymptotic method in investigating natural vibrations of elastic rectangular plates. Rasch.na proch. no.10:352-362 '64.
(MIRA 18:1)

KUDRYAVTSEV, Ye. [illegible] (Moskva)

Vibration of an infinitely long elastic cylindrical shell in a compressible gas flow. Izv. AN SSSR Mekh. i mashinostr. no.6: 113-116 N-D '64. (MIRA 18:2)

KUDRYAVTSEV, Ye. V.

"Cortical Connections Between Respiration and Muscular Activity." Cand Biol Sci, Inst of Physiology, Acad Sci USSR, Leningrad, 1953. (RZh Biol, No 1, Jan 55)

Survey of Scientific and Technical Dissertations Defended at USSR Higher Educational Institutions (12)
SO: Sum. No. 556, 24 Jun 55

KUDRYAVTSEV, Ye.V., doktor tekhn. nauk, red.; IONOV, V.P., kand. fiz.-mat. nauk, red.; VISKOVA, M., red.; DOTSENKO, V., tekhn. red.; IOVLEVA, N., tekhn. red.

[Mobile plasma] Dvizhushchaiasia plazma; sbornik perevodov. Moskva, Izd-vo inostr. lit-ry, 1961. 612 p. (MIRA 15:1)
(Plasma (Ionized gases))

USSR/Engineering - Heat, Ventilation Aug 51

"Thermal and Hydrodynamic Modeling of Air Motion in a Large Hall (Volume Model)," Ye. V. Kudryavtsev Power Engr Inst. im. Krzhizhanovskiy, AS USSR

"Iz Ak Nauk SSSR, Otdel Tekh Nauk" No 8, pp 1178-1187

Studies stability of "temp overlapping" caused by heating of upper part of hall with lighting sources, conditions for origination of circular movements and other problems which can not be solved by plane modeling. Proves sep coexistence of forced and natural convections, i.e., possibility for partial ventilation of large industrial premises and public halls. Describes model and presents its 205T18

USSR/Engineering - Heat, Ventilation (Contd) Aug 51

installation diagram and photographs. Submitted by Acad Kirpichev 3 May 51.

205T18

KUDRYAVTSEV, Ye,V.

Dr. Tech. Sci.

KUDRYAVTSEV, YE.V.

PA - 2814

AUTHOR KUDRYAVTSEV, YE.V., SHUMAKOV, N.V.,

TITLE Mean Temperature Method for Solid Body Heating Investigation. (Metod srednev temperatury dlya izucheniya protsessa nagreva tverdogo tela - Russian)

PERIODICAL Zhurnal Tekhn. Fiz., 1957, Vol 27, Nr 4, pp 856-867, (U.S.S.R.)
Received 5/1957 Reviewed 6/1957

ABSTRACT A method for the investigation of a non-steady heat exchange of solid bodies is described. A temperature point is shown to exist which is very close to the average slab temperature during heating. The problem of the heating of a flat slab by a heat flow, which changes according to time and in accordance with a linear law, is solved. Here the initial temperature of the disk is parabolically distributed. It is shown that with the initial temperature of the slab being homogeneous the temperature change of the plane with the coordinate $x^* = \frac{\sqrt{3}}{3} R$ corresponds to the change of the average slab temperature. x^* is the coordinate of the average-temperature point. The temperature value at the point x^* is shown to be equal to the average slab temperature in four cases. It is shown that the method of average temperature can be used for discovering the boundary function. In comparison with the method of consecutive intervals it is stated to be possible immediately to determine at any (but known) point of the disk the temperature distribution according to thickness by means of this method and immediately to pass on to the boundary function. The method of aver-

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PA - 2814

Mean Temperature Method for Solid Body Heating Investigation.

age temperature, however, demands a solution of the equations for the heat conductivity in the case of determined boundary conditions for the same operations. It is best to combine these two methods. The values of the boundary function found by means of the first method agree well with those which were found by the second method.
(With 4 illustrations and 2 citations from Slav publications)

ASSOCIATION ENIN of the Academy of Science of the USSR (ENIN AN SSSR)
PRESENTED BY
SUBMITTED 31. 1. 1956
AVAILABLE Library of Congress
Card 2/2

KUDRYAVTSEV, Ye. V.

Name : KUDRYAVTSEV, Ye. V.

Title : Candidate of Technical Sciences

Affiliation : Member, Editorial Board, "Problems of Rocket Technology"

Remarks : N. A. Akkerman, N. I. Biryukov, V. T. Vlasov, V. P. Ionov, Ye. V. Kudryavtsev, B. I. Nazarov, A. A. Orlov, V. A. Popov, and Yu. M. Shaulov are members of the editorial board of the periodical "Problemy Raketnoy Tekhniki" ("Problems of Rocket Technology"), published by the Foreign Literature Publishing House in Moscow. The periodical is a collection of translations and abstracts of foreign scientific articles and monographs.

Source : P: Problemy Raketnoy Tekhniki, No. 1, January 1958, p. 2

8.

KUDRYAVTSEV, Ye.V., doktor tekhn.nauk, red.; IONOV, V.P., kand.fiz.-mat. nauk, red.; OSOKINA, V.I., red.; RYBKINA, V.P., tekhn.red.

[Problems of high-speed flights] Problemy poleta s bol'shimi skorostiami; sbornik statei. Moskva, Izd-vo inostr.lit-ry, 1960. 173 p. (MIRA 14:3)
(Aerodynamics, Supersonic)

69964
S/170/60/003/01/01/023
B022/B007

24.5500

AUTHORS: Kudryavtsev, Ye. V., Chakalev, K. N.

TITLE: A Universal Electron Calorimeter

PERIODICAL: Inzhenerno-fizicheskiy zhurnal, 1960, Vol. 3, No. 1, pp. 3 - 9

TEXT: The authors constructed a universal electron calorimeter, which is destined for the simultaneous determination of the actual absolute values of heat capacity, heat conductivity, heat from phase transformations (melting heat), of latent heat, as well as of electrical conductivity within a large temperature range. The main characteristics of the new calorimeter are the improved regulation of the electron current and the removal of secondary-electron emission, as well as its operation under non-steady thermal conditions of the sample. The heated sample in the evacuated electron calorimeter serves as anode from which the cathode, which serves as electron source, is located at a distance of 150 mm (Fig.3). The heat flow q is proportional to the energy of the electrons, i.e., the current density j. On the basis of this relation all thermo-physical parameters and the electrical conductivity of the sample may be determined. The universal electron calorimeter consists of the calorimeter proper, the electrical measuring instrument, the

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A Universal Electron Calorimeter

high-temperature-, and the vacuum apparatus (Fig. 1). The calorimeter body consists of two perpendicular quartz tubes (Fig. 2). The electronic circuit is given (Fig. 3). In the electric circuit an oscilloscope of the type POB-12, loop galvanometers of the types GBSh-3 and GBSh-1, and a voltmeter of the type 134422, class 1, were used for the purpose of measuring the anode current. In the high-temperature part a control potentiometer PP or an oscilloscope of the type POB-12, and in the vacuum part a diffusion oil pump of the type TsVL-100 with a fore pump of the type VN-461B were used. The vacuum was controlled by means of a thermovacuometer of the type VT-2 and an ionization manometer of the type VI-3. The theoretical fundamentals of the method were checked by calculations. When calculating the absolute values of the quantities measured on the basis of readings of calorimetric measurements, the following sources of error must be taken into account: 1) Correction for the radiation of the sample. 2) Correction for the error in determining the distance due to fastening the thermocouple. 3) Errors of measuring devices. 4) Other sources of error. As test material, a silver sample with an Ag content of 99.99% was used. The coefficients of heat capacity and heat conductivity of this sample, determined by means of the universal electron calorimeter, are compared with the results obtained by other authors (Tables 1,2). Measurements carried out on porous bronze (Table 3) showed that

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69964

A Universal Electron Calorimeter

S/170/60/003/01/01/023
B022/B007

the results measured by means of the device described are well reproducible. There are 3 figures, 3 tables, and 11 references, 7 of which are Soviet.

ASSOCIATION: Energeticheskiy institut AN SSSR im. G. M. Krzhizhanovskogo, g.Moskva (Institute of Power Engineering of the AS USSR, imeni G. M. Krzhizhanovskiy, City of Moscow)

4

Card 3/3

KUDRYAVTSEV, Ye.V.; CHAKALEV, K.N.

Theory of the all-purpose electronic calorimeter method. Trudy MTIPP 15:30-40 '60. (MIRA 16:2)
(Calorimetry)

PHASE I BOOK EXPLOITATION SOV/5909

Kudryavtsev, Yevgeniy Vasil'yevich, Konstantin Nikolayevich Chakalev, and Nikolay Vasil'yevich Shumakov

Nestatsionarnyy teploobmen (Nonstationary Heat Exchange) Moscow, Izd-vo AN SSSR, 1961. 156 p. Errata printed on the inside of back cover. 2500 copies printed.

Sponsoring Agency: Akademiya nauk SSSR. Energeticheskiy institut im. G. M. Krzhizhanovskogo.

Resp. Ed.: A. S. Predvoditelev, Corresponding Member, Academy of Sciences USSR; Ed. of Publishing House: G. B. Gorshkov; Tech. Ed.: L. V. Yepifanova.

PURPOSE: This book is intended for specialists interested in heat-exchange problems.

COVERAGE: Methods of investigating the boundary conditions of heating (cooling) in solid bodies are discussed. These methods are free from the restrictions of the regular-regime method and the exponential methods, and are said to have

Card 1/4

been developed by the authors. Particular attention is given to measuring methods and to the application of established formulas for computing boundary conditions of nonstationary heat exchange. Stationary and nonstationary heat regimes are also discussed. The authors thank Engineers L. D. Kalinnikov and O. I. Luneva. There are 37 references: 31 Soviet, 4 German, 1 English, and 1 Italian.

TABLE OF CONTENTS:

AVAILABLE: Library of Congress

SUBJECT: Physics

AD/wrc/gmp

Card 4/4

3-5-62

S/170/61/004/001/010/020
B019/B056

AUTHORS: Kudryavtsev, Ye. V., Shumakov, N. V.

TITLE: Effect of Size and Material of a Solid on Nonsteady Heat Exchange

PERIODICAL: Inzhenerno-fizicheskiy zhurnal, 1961, Vol. 4, No. 1, pp. 63-70

TEXT: The effect of the size of a body upon its nonsteady heat exchange was studied by heating it in a water thermostat. The effect produced by the material of the body was studied in a potential flow, and likewise cooling was studied in an ice tank. The dependence of the heat flow on time and on the temperature drop, as well as the dependence of the heat exchange coefficient on time and on the temperature gradient was determined for various test pieces. As test pieces, silver pieces with 200, 150, 100, 75, 50, 25, and 12.5 mm radius, cobalt-, copper-, zinc-, and aluminum-pieces having a radius of 50 mm were used. A relation was introduced between heat flowing to the body and the duration of the process and the characteristic of the body concerned. It is shown that this

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equation is general enough for explaining a nonsteady heat exchange of various bodies with conditions otherwise being equal. This relation is derived on the assumption that to various bodies heated under equal conditions, the same quantities of heat are conveyed within certain periods τ, where the τ are proportional to their thermal capacity. Therefore, $q\tau$ = idem holds, with $\tau/c\rho R$ = idem. The physical nature of this relation is studied. It is found that the nonsteady nature of the process on both sides of that plane through which the heat exchange takes place, must be taken into account. A theoretical calculation may under certain circumstances only be carried out by means of computers. V. N. Sokolov is mentioned. There are 4 figures, 1 table, and 3 Soviet references.

ASSOCIATION: Energeticheskiy institut AN SSSR im. G. M. Krzhizhanovskogo, g. Moskva (Institute of Power Engineering of the AS USSR imeni G. M. Krzhizhanovskiy, Moscow)

SUBMITTED: July 21, 1960

39518
S/649/61/000/139/010/018
1028/1228

24.5200

AUTHORS: Kudryavtsev, E. V. and Shumakov, N. V.

TITLE: Similitude of the non-stationary heat exchange of solid bodies under identical conditions

SOURCE: Moscow. Institut inzhenerov zheleznodorozhnogo transporta. Trudy, no. 139. 1961. Teoriya podobiya i yeye primeneniye v teplotekhnike; trudy pervoi mezhvuzovskoy konferentsii, 122–130

TEXT: Heat exchange of solid bodies cannot be solved by the theory of similitude, since the boundary conditions of the real process cannot be expressed analytically a priori. An investigation was conducted on cylinders having one heat-exchanging and the remaining thermally insulated surfaces. The experiments establish an equation of non-stationary heat exchange:

$$q(\tau_h) = \text{idem} \quad \text{for} \quad \tau_h/c\rho R = \text{idem} \tag{1}$$

where $q(\tau_h)$ = the value of the heat flux entering the body at the moment τ_h, $c\rho$ = the volume heat capacity of the body substance, R = the determining dimension, and τ_h is called the "time of similar heat content". The following consequences are drawn from this formula for different bodies heated under identical con-

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ditions: a) the variations of the mean integral temperatures of the bodies, taken at times of similar heat content, are equal; b) the variations of the surface temperatures of the bodies, taken at times of similar heat content, are equal; c) the ratio of the heat contents of two bodies, taken at times of similar heat content, is equal to the ratio $(c\rho R)_A/(c\rho R)_B$; d) at the same temperature head, different heat fluxes enter the different bodies; e) the dependence of the heat flux on the temperature head is the same for different bodies, provided their thremal resistances R/γ are equal. There are 4 figures.

ASSOCIATION: Energeticheskiy institut AN SSSR (Institute of Energetics, AS USSR)

KUDRYAVTSEV, Ye.V., master apparatnogo tsekha

Condenser protection of type EKG-60/20 main controllers.
Elek. i tepl. tiaga 7 no.10:15-16 O '63. (MIRA 16:11)

1. Depo Krasnoyarsk Vostochno-Sibirskoy dorogi.

39517

S/649/61/000/139/011/018
I028/I238

24.5200

AUTHOR: Kudryavtsev, E. V. and Chakalev, K. N.

TITLE: A calorimetric method of testing the determination of boundary conditions in non-stationary heat exchange

SOURCE: Moscow. Institut inzhenerov zheleznodorozhnogo transporta. Trudy, no. 139. 1961. Teoriya podobiya i yeye primeneniye v teplotekhnike; trudy pervoi mezhvuzovskoy konferentsii, 131–134

TEXT: The paper describes a universal electronic calorimeter for measuring the radiant heating of solid bodies. A cylindrically-shaped specimen serves as an anode, heated by means of bombarding electrons from a glowing cathode. The heat flow q, which can be varied, is given by the formula

$$q = 0.86\, jU \qquad (1)$$

where $j = i/S$ = the density of the electron current on the bombarded surface, V = the anode tension. The initial temperature t_0 of the specimen is established by means of an electric heater. Temperatures $t(\tau)$ (τ = the time) during the experiment are measured at two different points by thermocouples, and recorded on

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S/649/61/000/139/011/018
I028/I228

an oscillograph, together with the current and tension. The heat flow q is determined by means of (1). This permits us to determine empirically the relationship $t(x,\tau) - t_0 = f(q)$, which agrees well with the theoretical one, obtained by the method of successive intervals (which splits the time τ into a series of intervals, in each of which the heat flow is assumed to be constant). There are 2 figures.

ASSOCIATION: Energeticheskiy institut AN SSSR (Institute of Energetics, AS USSR)

KUDRYAVTSEV, Ye. V.; CHAKALEV, K. N.; LUNEVA, O. I.

Standards for heat flow measurement. Teplo- i massoper. 1: 140-145 '62. (MIRA 16:1)

1. Energeticheskiy institut im. G. M. Krzhizhanovskogo.

(Calorimetry)

L 35844-66 EWT(1) JAJ/WW

ACC NR: AP6014983 SOURCE CODE: UR/0170/66/010/005/0573/0576

43
B

AUTHOR: Kudryavtsev, Ye. V.; Turchin, I. A.

ORG: Institute of Construction Physics, Moscow (Institut stroitel'noy fiziki)

TITLE: The dependence of unsteady-state heat transfer on the heat flux density

SOURCE: Inzhenerno-fizicheskiy zhurnal, v. 10, no. 5, 1966, 573-576

TOPIC TAGS: convective heat transfer, heat flux, hydrodynamics

ABSTRACT: The basic element of the experimental apparatus was a Nichrome ribbon with dimensions 157 x 20 x 7 x 10^{-3} mm. The ribbon was stretched between two copper prisms which served to lead in the current, and was placed in the field of a Type IZK-454 interferometer, along a vertical plane. Thus, the hydrodynamic process was determined by natural convection on both sides of the ribbon. Into the circuit were connected electrolytic condensers with a capacitance of 5000 microfarads, which served as accumulators of energy, and a variable resistance which made it possible to regulate the rate of discharge of the condensers and, consequently, the rate of change of the thermal stress. The charge on

Card 1/2 UDC: 536.25

L 35814-66
ACC NR: AP6014983

the condensers was created from a 220 volt alternating circuit through two D-207 diodes connected in series and a 12 ohm resistance coil. During the experiments, measurements were made of the air temperature, and the current strength and voltage at the ends of the ribbon, the changes of which were recorded in a Type N-105 oscillograph with simultaneous photography. Experimental results are shown in a series of curves and photos. Of particular interest is a figure showing interferograms of the Nichrome ribbon for three different heating conditions, after the passage of an equal period of time, 0.417 sec, after the current was turned on. It is evident from the photo that the temperature of the surface of the ribbon and the distribution of the temperature in the boundary layer at the end of the stated interval of time are different. The highest surface temperature (49°C) corresponds to a maximum rate of heating the ribbon, and vice versa. Orig. art. has: 4 figures.

SUB CODE: 20/ SUBM DATE: 20Dec65/ ORIG REF: 002

Card 2/2

KUDRYAVTSEV, Ye.Ye., marksheyder; IVANOV, L.I., marksheyder.

Effect of mining operations upon the forest area of the Moscow Coal Basin. Ugol' 29 no.1:33-35 Ja '54. (MLRA 7:1)

1. Tul'skaya oblastnaya GGTI (for Kudryavtsev). 2. Trest Skuratovugol' (for Ivanov).
(Moscow Basin--Coal mines and mining) (Coal mines and mining--Moscow Basin) (Moscow Basin--Forests and forestry) (Forests and forestry--Moscow Basin)

KUDRYAVTSEV, Yu.

Measurements in the adjustment of low-frequency amplifiers. Radio no.11:53-54 N '63. (MIRA 16:12)

KUDRYAVTSEV, Yu., inzh.

Stereophonic low-frequency amplifier. Radio no.1:44-47 Ja '64.
(MIRA 17:8)

14(1) SOV/67-59-2-11/18

AUTHOR: Kudryavtsev, Yu. A., Engineer

TITLE: Improvement of the System of Protecting the Engines Driven by Compressed Gas DVD-2 and DVD-4 From Overspeeding (Uluchsheniye sistemy zashchity detanderov DVD-2 i DVD-4 ot razgona)

PERIODICAL: Kislorod, 1959, Nr 2, pp 46-47 (USSR)

ABSTRACT: Air expansion in the piston engines DVD-2 and DVD-4 is used for driving an asynchronous alternator which supplies the generated electric energy to the system. A V-belt is employed as transmission. In this combination (engine driven by compressed gas - alternator), however, frequently occur drawbacks and breakdowns of the engine driven by compressed gas due to overspeeding. This may occur, for instance, by burning of a fuse, cable break, etc, when the alternator is disconnected. An electric circuit was designed for the purpose of protecting the afore-mentioned engines from overspeeding, though even this device did not exclude any drawbacks. Figure 1 contains the electric circuit that was designed first by the VNIIKIMASh for the purpose of protecting the piston engines DVD-2 and DVD-4 of the plants KG-300-2D and KT-1000 from being oversped. The two drawbacks which occurred in spite of the afore-said

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protection consisted in a burning of the fuse of the relays due to the fact that the air-intake valve had been too widely opened, and in a cable break due to excessive vibration. The breaking mechanism did not respond. In order to overcome these disturbances, the selenium rectifier was directly connected to the circuit of the alternator so that a drawback in the supply system could not entail disturbances any longer. Yet even this measure is to be submitted to further investigations so as to ensure safe operation of the machine driven by compressed gas. There are 2 figures.

SOV/67-59-3-9/27

14(1)
AUTHOR: Kudryavtsev, Yu. A., Engineer

TITLE: Improved Construction of the Nitrogen Electric Pre-heater (Uluchshennaya konstruktsiya elektropodogrevatelya azota)

PERIODICAL: Kislorod, 1959, Nr 3, pp 38 - 39 (USSR)

ABSTRACT: In the oxygen plants of the type KG-300-2D aluminum oxide adsorption dryers are used for high-pressure air. The regeneration of the adsorption dryers is carried out by means of preheated nitrogen obtained by the fractionation column. The heating elements used for the heating of nitrogen have hitherto been applied in such a way that an oxide layer forming during the heating soiled the heating spirals which easily led to the burning through of the spirals. Besides, also the metal cylinder of the heating element easily burnt through. In the new construction which is now being used in the oxygen station of the Magnitogorskiy Metallurgical Kombinat a chamotte cylinder was applied around the heating element which prevents both the burning through of the cylinder as well as the pollution of the heating spiral (Fig 2).

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Improved Construction of the Nitrogen Electric Pre-heater

SOV/67-59-3-9/27

This new pre-heater is in continuous operation already since 2 years. There are 2 figures.

Card 2/2

ACC NR: AT6029241 SOURCE CODE: UR/0000/66/000/000/0333/0340

AUTHOR: Kudryavtsev, Yu. A.

ORG: none

TITLE: Solution of a problem in nonlinear programming on a combination computer

SOURCE: Vsesoyuznaya konferentsiya-seminar po teorii i metodam matematicheskogo modelirovaniya. 4th, Kiev, 1964. Vychislitel'naya tekhnika v upravlenii (Computer technology in control engineering); trudy konferentsii. Moscow, Izd-vo Nauka, 1966, 333-340

TOPIC TAGS: linear programming, nonlinear programming, special purpose computer, aircraft cargo handling

ABSTRACT: The calculation of the location of the center of gravity and the mode of loading a passenger aircraft involves a large number of variables, including weight and the abscissa of the center of gravity of an empty aircraft; the number of crew members and the mean abscissa of their location; the number of rows of passenger seats, and the abscissas of their centers of gravity; the weight of the cargo; the number of cargo holds, their maximum capacities and abscissas, etc. The calculation of the center of gravity location was reduced to a mixed set of linear inequalities and equations. The set may have no solutions, or have a unique solution, or a multiplicity of solutions. For the case of a multiplicity of solutions, a criterion of selecting an opti-

Card 1/2

ACC NR: AT6029241

mum solution was obtained; it amounts to the minimization of an expression, which is the sought function, with certain restrictions. The obtained expression is the absolute value of the difference between a variable sum and some constant. Thus, the characteristics of the sought function makes it possible to reduce a problem of nonlinear programming to a problem of linear programming. The linear programming is done in two steps: 1) a maximization of the sought function, or of the linear form, and 2) a minimization of the linear form with certain restrictions and boundary conditions, respectively. Ultimately, the problem is solved by modeling, or ordered sorting, or various loading variants until the desired location of the center of gravity is obtained. An extensive comparison of the suggested method of ordered sorting with a number of generalized methods of mathematical programming indicates that both the number of operations and the number of addresses is considerably smaller with this method. Thus, the fictitious game method requires 745×100^{60} operations, whereas ordered sorting requires only 33,905 operations to arrive at the same solution. General purpose computers do not lend themselves well to this purpose. It appears desirable to use a specialized computer comprised of a digital computer and an analog or digital simulator. Orig. art. has: 3 tables, 10 formulas.

SUB CODE: 09,01/ SUBM DATE: 12Feb66

Card 2/2

KUDRYAVTSEV, Yu.A.

Use of electric generators for controlling the refrigerating capacity of expanders in oxygen plants. Prom.energ. 16 no.10: 10-12 O '61. (MIRA 14:10)

(Oxygen)

L 12960-65 EWT(m)/EWP(m)-2/EWP(t)/EWP(b) Pr-4 JD/JG
ACCESSION NR: AR4044206 S/0137/64/000/006/G030/G030

SOURCE: Ref. zh. Metallurgiya, Abs. 6G192

AUTHOR: Kudryavtsev, Yu. D.; Golubchik, Ye. M.; Smirnov, V. A. B

TITLE: Electrolytic production of chromium-molybdenum alloy

CITED SOURCE: Tr. Novocherk. politekhn. in-ta, v. 146, 1963(1964), 41-46

TOPIC TAGS: electrolytic production, chromium based alloy, molybdenum containing alloy

TRANSLATION: For production of Cr-Mo-alloy (containing 10-11% Mo) there is recommended the electrolytic composition (in g/l), CrO_3 - 250, MoO_4 - 80, H_2SO_4 - 2.5; at D_k = 40 a/dm^2 and a temperature of 45-50°, the current efficiency is 11-12%.

SUB CODE: MM ENCL: 00

Card 1/1

KUDRYAVTSEV, Yuriy Georgiyevich; MELAMED, Vladimir Ionovich, kand.tekhn.nauk; MEL'NIKOV, Andrey Sergeyevich; KUTUKOV, V.F., inzh., retsenzent; ROZENTSVEYG, V.D., inzh., retsenzent; KUNIN, N.F., doktor fiz.-mat. nauk, red.; DUGINA, N.A., tekhn. red.

[Production and use of ceramic articles in the machinery industry] Proizvodstvo i primenenie mineralokeramicheskikh izdelii v mashinostroenii. Pod red. N.F.Kunina i V.I.Melameda. Moskva, Mashgiz, 1962. 157 p. (MIRA 15:10)
(Machinery industry) (Ceramics)

15-57-5-6843

Translation from: Referativnyy zhurnal, Geologiya, 1957, Nr 5, p 160 (USSR)

AUTHOR: Kudryavtsev, Yu. I.

TITLE: The Plane Inverse Problem in Geophysics (Poloskaya obratnaya zadacha geofiziki)

PERIODICAL: Uch. zap. LGU, 1956, Nr 210, pp 83-92.

ABSTRACT: Existing formulas for determining the depth to the center of mass generating a field and, in particular, the method of A. P. Kazanskiy, give a completely inadmissible error at the expense of an error in measuring the normal field. The author derives a new formula for determining the depth to the center of mass generating a potential field. The method of determining the depth, as proposed by the author, insures that errors in determining the normal field will but slightly affect the value of depth obtained. In many cases, according to such a procedure, it is possible to obtain a value for depth with an error not exceeding 20 percent. A formula is given for determining depth in

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The Plane Inverse Problem in Geophysics (Cont.)

the case when the magnetic field is similar in nature to the gravitational field. The last paragraph of the paper attempts to give an approximate determination of the lower semi-field, inasmuch as this problem is directly related to the determination of depth to the center of mass which is the source of the field.

Card 2/2

A. M. L.

KUDRYAVTSEV, YU. I.

"The Two-Dimensional Inverse Problem of Geophysics," an Article in Scientific Notes of the Leningrad Order of Lenin State University imeni A. A. Zhdanov, No. 210, Physics Institute, Physical Science Series, No. 9, Geophysics, 1956, 190 pp.

SUM: 1360

9(6)

AUTHORS: Kudryavtsev, Yu. I., Novikov, P. I.

SOV/64-59-1-21/24

TITLE: Determining the Concentration of Potassium in Potassium Minerals by the Gamma Method (Opredeleniye kontsentratsii kaliya v kaliynoy rude s pomoshch'yu gamma-metoda)

PERIODICAL: Khimicheskaya promyshlennost', 1959, Nr 1, pp 88-89 (USSR)

ABSTRACT: Instead of the time-consuming chemical method, the gamma determination based on natural γ-radiation of potassium may be used to control the content of potassium. The "B"-plant, fed by way of the alternating-current rectifier ST-200, was used as a recorder in the present case. The mineral sample was placed into an aluminum cylinder which was contained in a larger aluminum cylinder in a cast-iron vessel. 20 VS-9 counters were installed in the space between the two aluminum cylinders. The positive pole of the high voltage was earthed, and the negative pole was connected with the counter cathodes. The negative impulses were conducted to the lamp BGS. It is pointed out that the average density of the sample affects the number of impulses. The following should be considered in measurements: 1) The content of other radioactive elements, 2) The time of measurement (at least 30 minutes

Card 1/2

Determining the Concentration of Potassium in Potassium Minerals by the Gamma Method

at about 15% K), 3) The content of potassium is determined without taking into account the humidity of the sample, and 4) The device should be adjusted once a month and checked daily. There is 1 figure.

KUDRYAVTSEV, Yu. I.

Some problems in the thoery of induction logging. Prikl. geofiz. no.28:101-115 '60. (MIRA 14:3)
(Oil well logging, Electric)

KUDRYAVTSEV, Yu.I.

The frequency method of measurement in magnetic susceptibility logging. Uch. zap. LGU no.286:87-98 '60. (MIRA 14:3)
(Magnetic prospecting)

KAZAKOV, N.I., gornyy tekhnik; YUNOVICH, M.I., gornyy inzh.; KUDRYAVTSEV, Yu.I., gornyy inzh.; SMOLDYREV, A.Ye., kand.tekhn.nauk; MARKOV, Yu.A., gornyy inzh.; KURBATOV, A.K., gornyy inzh.

Study of the operation of a hydraulic hoist in the "Belkina-Ventilyatsionnaya" Mine. Gor. zhur. no.6:43-47 Je '62. (MIRA 15:11)

1. Leninogorskoye shakhtostroyupravleniye (for Kazakov).
2. Vsesoyuznyy nauchno-issledovatel'skiy institut tsvetnoy metallurgii, Ust'-Kamenogorsk (for Yunovich, Kudryavtsev).
3. Institut gornogo dela im. Skochinskogo, Moskva (for Smoldyrev, Markov, Kurbatov).

(Leninogorsk region (East Kazakhstan Province)--Mine hoisting)

KUDRYAVTSEV, Yu.I.; MEYYER, V.A.

Interpretation of logging diagrams of magnetic susceptibility.
Uch. zap. LGU no.320:134-161 '63. (MIRA 16:9)
(Magnetic prospecting)

L 27250-66 EWP(j)/EWP(k)/EWT(d)/EWT(m)/EWP(h)/EIC(m)-6/T/EWP(1)/EWP(e)/EWP(v)/
ACC NR: AP6009866 EWP(t) RM/WH/ WW/JD/HM SOURCE CODE: UR/0413/66/000/004/0060/0060

52
B

AUTHOR: Kudryavtsev, Yu. I.

ORG: none

TITLE: Device for soldering metal with glass. Class 32, No. 178958

SOURCE: Izobreteniya, promyshlennyye obraztsy, tovarnyye znaki, no. 4, 1966, 60

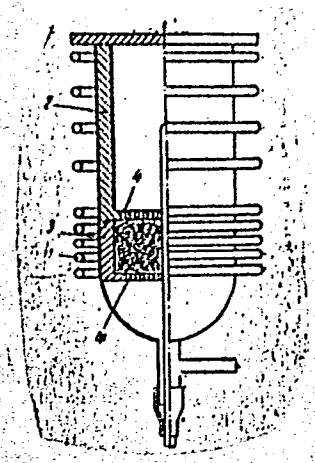
TOPIC TAGS: glass to metal seal, gas filter

ABSTRACT: This Author Certificate presents a device for soldering metal with glass in a protective gas medium. The device includes an inductor, a soldering container, and a gas scrubbing container (see Fig. 1). To improve the quality of the soldered joint and to decrease the size of the device, the soldering container and the gas scrubbing container are made with perforated bottoms and are placed one above the other.

Card 1/2 UDC: 666.1.037.5:621.792.3/.6

L 27250-66
ACC NR: AP6009866

Fig. 1. 1 - inductor; 2 - soldering container;
3 - gas scrubbing container;
4 - perforated bottoms.



Orig. art. has: 1 diagram.

SUB CODE: 11, 13/ SUBM DATE: 19Nov64

Card 2/2

86324

2209

S/190/60/002/012/011/019
B017/B078

15.8114 also 1144,1160

AUTHORS: Korshak, V. V., Sladkov, A. M., Kudryavtsev, Yu. P.

TITLE: Synthesis of Acetylide Polymers

PERIODICAL: Vysokomolekulyarnyye soyedineniya, 1960, Vol. 2, No. 12, pp. 1824 - 1827

TEXT: The electrophysical properties of acetylide polymers have been studied by means of spectra of electron paramagnetic resonance. The production of acetylide polymers of bivalent copper from acetylene and diethynyl benzene is described in detail. The spectra of the electron paramagnetic resonance of polyacetylides from β-diethynyl benzene and acetylene are shown in a figure. The electron paramagnetic resonance of copper polyacetylide is particularly strong. The epr spectra were evaluated by N. N. Bubnov. There are 1 figure and 8 references: 5 Soviet, 1 US, 1 British, and 1 French.

ASSOCIATION: Institut elementoorganicheskikh soyedineniy AN SSSR (Institute of Organometallic Compounds of the Academy of Sciences USSR)

Card 1/2

86324

Synthesis of Acetylide Polymers

S/190/60/002/012/011/019
B017/B078

SUBMITTED: May 21, 1960

Card 2/2

82101
S/062/60/000/07/04/007
B015/B054

5.3700

AUTHORS: Nesmeyanov, A. N., Nogina, O. V., Berlin, A. M., Kudryavtsev, Yu. P.

TITLE: Chemical Transformations of Dialkoxy Titanium Oxides

PERIODICAL: Izvestiya Akademii nauk SSSR. Otdeleniye khimicheskikh nauk, 1960, No. 7, pp. 1206-1214

TEXT: The authors describe the chemical properties of dialkoxy titanium oxides. They continued the investigation of deposition to the >Ti = O bond, studied the etherification reactions, and found the substitution of alkoxyls by halogens as well as a substitution reaction of the oxygen bound to titanium with two chlorine atoms. They obtained the first compounds of a hitherto unknown series of titanium-containing organic compounds, i.e., ethoxy-, n-propoxy-, and n-butoxy titanium oxide chlorides. By the action of chlorine on di-n-propoxy- and diisobutoxy titanium oxides, they produced the compounds $Cl_2TiO \cdot 2n\text{-}C_3H_7OH$ and $Cl_2TiO \cdot 2i\text{-}C_4H_9OH$. On the reaction of dialkyl dichloro silanes with dialkoxy titanium oxides, the following exchange of oxygen with two chlorine atoms takes place:

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Chemical Transformations of Dialkoxy Titanium Oxides

82101
S/062/60/000/07/04/007
B015/B054

$(n\text{-}C_3H_7O)_2TiO + Cl_2SiR_2 \longrightarrow (n\text{-}C_3H_7O)_2TiCl_2 + \left[OSiR_2\right]_x$. A similar reaction takes place by the action of tetra-n-propoxy silane on the compound $Cl_2TiO \cdot 2n\text{-}C_3H_7OH$, namely $Cl_2TiO \cdot 2n\text{-}C_3H_7OH + (C_3H_7O)_4Si \longrightarrow Cl_2Ti(OC_3H_7)_2 \cdot n\text{-}C_3H_7OH + n\text{-}C_3H_7OH + \left[OSi(OC_3H_7\text{-}n)_2\right]_x$. By the linkage of dimethyl di-n-propoxy silane with di-n-propoxy titanium oxide, the following compounds were obtained:

$$(C_3H_7O)_3Ti\text{-}O\text{-}Si(CH_3)(OC_3H_7)\text{-}CH_3 \quad \text{and} \quad (C_3H_7O)_3Ti\text{-}O\text{-}Si(CH_3)_2\text{-}O\text{-}Ti(OC_3H_7)_3 .$$

There are 8 references: 7 Soviet and 1 British.

ASSOCIATION: Institut elementoorganicheskikh soyedineniy Akademii nauk SSSR (Institute of Elemental-organic Compounds of the Academy of Sciences, USSR)

SUBMITTED: January 23, 1959

Card 2/2

20638

~~15.9207~~ ~~2209 also 1045, 1145,~~ 1138 S/020/61/136/006/014/024
~~11.2210~~ B103/B203

AUTHORS: Korshak, V. V., Corresponding Member AS USSR, Kasatochkin, V.I., Sladkov, A. M., Kudryavtsev, Yu. P., and Usenbayev, K.

TITLE: Synthesis and properties of polyacetylene

PERIODICAL: Doklady Akademii nauk SSSR, v. 136, no. 6, 1961, 1342-1344

TEXT: The authors produced polyacetylene (PA) and studied its chemical structure and physical properties. They assumed that PA formed in the oxidation of bis-acetylene acetylenides of the type $HC\equiv C-(CH_2)_n-C\equiv CH$ which are said to be among the polymeric products not yet studied. They had already suggested a formation mechanism of PA in Ref. 3. In the present investigation, they produced the required acetylenide by passing acetylene through the ammoniacal solution of a salt of bivalent copper. Subsequently, the acetylenide was oxidized by an aqueous solution of potassium ferricyanide at boiling temperature. The authors assumed that the resulting black powder (containing 98% of C) was a mixture of polymer homologs of polyacetylene. On the basis of the temperature-dependent weight losses

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(Fig. 1) and the electron paramagnetic resonance, they conclude that this product is a polymer with cumulene structure, probably $H-(C{=}C{=}C{=}C)_n-H$.

PA showed high heat resistance, being transformed into graphite only at 2300°C. Below 2300°C, the carbon in PA remains in the form of polyacetylene.

They conclude that the PA sample investigated is an n-type semiconductor. The copper atoms imbedded in the molecular carbon chain with polyallene structure play the role of the electron donor. This is confirmed by the fact that the α of PA samples which were produced with the use of stronger copper-free oxidizers (nitrate ion, H_2O_2) is equal to zero. The change of the sign of α (near zero at 1300 and 1500°C $\pm$ above 1500 up to 2300°C corresponds to the transition of the PA sample to a p-type semiconductor. The authors think that this is coupled with the thermal dissociation and the separation of copper- and hydrogen atoms from the carbon chain, and is certainly connected with the acceptor properties of the terminal C atoms. There are 3 figures, 1 table, and 3 references: 1 Soviet-bloc and 1 non-Soviet-bloc.

ASSOCIATION: Institut goryuchikh iskopayemykh Akademii nauk SSSR (Institute of Mineral Fuels of the Academy of Sciences USSR)
Institut elementoorganicheskikh soyedineniy Akademii nauk SSSR (Institute of Elemental-organic Compounds of the Academy of Sciences USSR)

Card 2/2

S/020/62/144/001/016/024
B119/B144

AUTHORS: Korshak, V. V., Corresponding Member AS USSR, Sladkov, A. M., and Kudryavtsev, Yu. P.

TITLE: Oxidative dehydropolycondensation of 2,6-dimethyl-3,5-diethinyl pyridine and 9,10-diethinyl-9,10-dihydroxy-9,10-dihydro-anthracene

PERIODICAL: Akademiya nauk SSSR. Doklady, v. 144, no. 1, 1962, 115 - 117

TEXT: The authors checked their assumption that the reaction

$$n\ HC\equiv C-R-C\equiv CH \xrightarrow[Cu^{+}]{O_2} -\left[C\equiv C-R-C\equiv C\right]_n-$$

must lead to soluble products (1) if it takes place in the presence of compounds containing only one $HC\equiv C$ group (lower molecular weight by early chain rupture; (2) if it proceeds with compounds where R is a large hydrocarbon group, or (3) if R represents a polar group. The compounds mentioned in the title were condensed alone, and also in the presence of acetylene, p-diethinyl benzene, phenyl acetylene, propargyl alcohol, and 2-methyl-5-ethinyl pyridine. The structure of the

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condensation products was determined from their infrared spectra. Products consisting of a soluble and an insoluble fraction of identical structure were obtained in all cases. The epr spectra taken for some condensation products showed equal concentration of individual electrons in the soluble and insoluble fractions. The highest number of individual electrons ($\sim 2.2 \cdot 10^{17}$ at a signal width of 7.2 oe) was found in the condensation product of 9,10-diethinyl dihydroxy dihydroanthracene with acetylene. There is 1 table. The most important English-language reference is: A. Hay, J. Org. Chem., 25, 1275 (1960).

ASSOCIATION: Institut elementoorganicheskikh soyedineniy Akademii nauk SSSR (Institute of Elemental Organic Compounds of the Academy of Sciences USSR)

SUBMITTED: January 16, 1962

9.4160

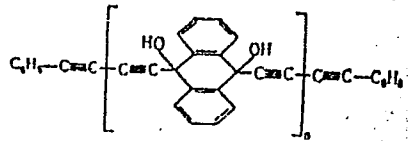
S/020/62/144/004/019/024
B101/B138

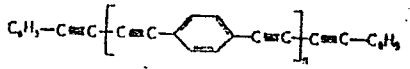
AUTHORS: Myl'nikov, V. S., Sladkov, A. M., Kudryavtsev, Yu. P., Luneva, L. K., Korshak, V. V., Corresponding Member AS USSR, and Terenin, A. N., Academician

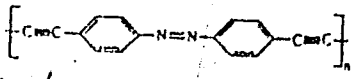
TITLE: Photo-semiconductor properties of acetylene polymers

PERIODICAL: Akademiya nauk SSSR. Doklady, v. 144, no. 4, 1962, 840 - 843

TEXT: Data for the polyacetylenes I - VIII are reported from the laboratory directed by A. N. Terenin where research on photosensitive polymers has long been proceeding. The compounds were synthesized in the laboratory directed by V. V. Korshak. I, II and III were very photosensitive in


(I)


(III)


(II)

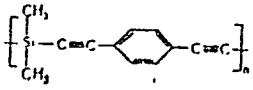

(IV)

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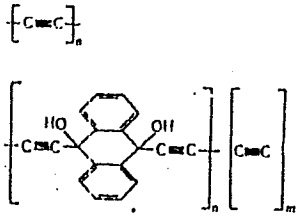
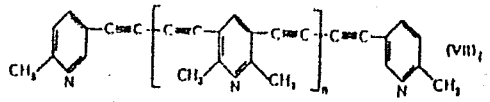
Photo-semiconductor properties... S/020/62/144/004/019/024
B101/B138

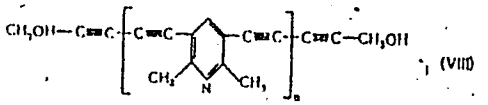


(V)

(VI)



(VII)



(VIII)

modulated light (10 mv/mw at 300 cps). IV, V and VI were less photo-sensitive; VII and VIII showed no photo-emf. In I - IV the conductivity was of p type, in V and VI it was of n type. I and II were examined more closely. Results: (1) The spectral distribution of photo-emf showed a reduction in this effect at 200 → 600 mμ with a narrow selective peak of exciton type at λ = 480 mμ in the case of I and a wide peak in this range for II. (2) Preliminary illumination of II for 2 hr in ultraviolet light from an OBL-120 (SVD-120) mercury lamp increased its photo-emf by one order of magnitude. The long-wave threshold of activation is at 366 mμ and the 405 mμ line is inactive. (3) Preliminary illumination is more effective in vacuo than in air. The photo-emf of I increases during the first

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3 - 5 min lighting, then slowly decreases, but after approx. 1 hr regains its initial value. After 1 - 2 hr storage in the dark this process is repeatable. (4) If II is activated by UV light in vacuo the admission of air immediately reduces its photo-emf to 1/2 - 1/3. This effect is also repeatable. These results are explained by the UV light ionizing the conjugated molecules so that positively charged local centers are formed which act as electron traps. The photoelectron is retained in the polymer structure according to E. C. Lim, G. W. Swenson (J. Chem. Phys., 36, no. 1, 118 (1962)). The absorption of light permits the origination of an exciton which migrates between the molecules and disintegrates on a defect produced by the UV light to form a mobile hole and an electron trapped by the defect. Accordingly it should be possible to synthesize photosensitive polymers. There are 3 figures.

SUBMITTED: April 20, 1962

KASATOCHKIN, V.I.; SLADKOV, A.M.; KUDRYAVTSEV, Yu.P.; SMUTKINA, Z.S.; KHRENKOVA, T.M.; KORSHAK, V.V.

Properties of polyacetylenes. Izv. AN SSSR Ser.khim. no.10:1766-1771 O '63. (MIRA 17:3)

1. Institut elementoorganicheskikh soyedineniy AN SSSR i Institut goryuchikh iskopayemykh.

KORSHAK, V.V.; SLADKOV, A.M.; KUDRYAVTSEV, Yu.P.; MAKHSUMOV, A.G.

Synthesis of polyesters containing acetylenic bonds in the chain.
Izv. AN SSSR Ser.khim. no.10:1852-1853 O '63. (MIRA 17:3)

1. Institut elementoorganicheskikh soyedineniy AN SSSR.

L 18044-63 EWP(j)/EPF(c)/EWT(m)/BDS AGD Pc-4/Pr-4 RM/WW/MAY
ACCESSION NR: AP3001145 S/0190/63/005/006/0793/0798

AUTHORS: Korshak, V. V.; Sladkov, A. M.; Kudryavtsev, Yu. P.

TITLE: Oxidative dehydropolycondensation of p-diethinylbenzene

SOURCE: Vysokomolekulyarnyye soyedineniya, v. 5, no. 6, 1963, 793-798

TOPIC TAGS: oxidative condensation, copolycondensation, dehydropolycondensation, diethinylbenzene, acetylene

ABSTRACT: Earlier studies by the authors on dehydropolycondensation of p-diethinylbenzene by oxidation with potassium ferricyanide in the presence of cuprous chloride induced the present investigation, where oxygen of the air, hydrogen peroxide, and ammonium persulfate were added to the list of oxidizers. For copolymeryzation studies, acetylene, phenylacetylene, and ethylacetylene were used in conjunction with p-diethinylbenzene. The oxidative dehydropolycondensation of p-diethinylbenzene by air was conducted in a pyridine solution in the presence of cuprous chloride, through which air was bubbled for 1.5 hours, resulting in the formation of a yellow precipitate. The obtained substance was subjected to elementary analysis and to infrared spectroscopy, which showed

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ACCESSION NR: AP3001145

absorption bands in the 3300 and 1250 cm^{-1} regions, which are characteristic for ≡C-H bonds, while the 2200 cm^{-1} band is indicative of the C≡C bond. The appearance of other characteristic bands indicated the presence of phenyl nuclei along the polymeric chain. The oxidative copolymerization of diethinylbenzene with acetylene, phenylacetylene and ethylacetylene yielded low molecular ether-soluble compounds with the first two instances, and an insoluble product with ethylacetylene. Orig. art. has: 4 formulas and 5 charts.

ASSOCIATION: Institut elementoorganicheskikh soedineniy AN SSSR (Institute of Elementoorganic Compounds, Academy of Sciences, SSSR)

SUBMITTED: 14Oct61 DATE ACQ: 01Jul63 ENCL: 00

SUB CODE: CH NO REF SOV: 003 OTHER: 002

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L 11143-63 EWP(j)/EPF(c)/EWT(m)/BDS/ES(s)-2--AFFTC/ASD/ESD-3/SSD--Pc-4/
Pr-4/Pt-4--RM/WW/MAY
ACCESSION NR: AP3001448 S/0074/63/032/005/0509/0538

AUTHOR: Sladkov, A. M.; Kudryavtsev, Yu. P.

TITLE: Polyacetylenes

SOURCE: Uspekhi khimii, v. 32, no. 5, 1963, 509-538

TOPIC TAGS: synthesis of polyacetylenes, properties of polyacetylenes, macrocyclic compounds, dehydrocondensation

ABSTRACT: The original article gives a summary of the systhesis and properties of polyacetylenes, macrocyclic compounds with conjugated acetylenic bonds, and the synthesis of polyacetylenes by an oxidizing dehydropolycondensation of bis-acetylenes. The polyacetylenes presently synthesized have as many as 10 conjugated triple bond molecules. The natural polyacetylenic compounds are not discussed. The basic methods which make the synthesis of a large variety of polyacetylenic hydrocarbons were developed by K. Glaser, P. Cadiot and W. Chodkiewiez, and E. R. H. Jones. These methods are represented as shown in the enclosure. Butadiene-1,3 (diacetylene), one of the simplest compounds, was first prepared through oxidation of acetylenide with CuCl, and later with $KMnO_4$. It was found that water solutions of $Ca(OH)_2$ and K_2CO_3 when used in the reaction give yields as high as 60 percent. Diacetylene is quite unstable and can be stored only at

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ACCESSION NR: AP3001448

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temperatures lower than -25C. When the second acetylenic bond is introduced into an acid molecule the dissociation constant increases. A noticeable amount of diacetylene glycol was found in all the reactions. A number of explanations are given for the mechanism of the oxidized dehydrocondensation. Klebanskiy with his co-workers believe that the formation of diacetylenic compounds in aqueous solutions proceed by an ionic radical mechanism. Triacetylenes which are very unstable even at -50C and diphenyltriacetylenes which are quite stable in comparison to aliphatic triacetylenes were also synthesized by various methods. The synthesis of octatetrayne-1,3,5,7 (tetraacetylene), decapentayne-1,3,5,7,9 (penta-acetylene), dodecahexayne-1,3,5,7,11 (hexa-acetylene), tetradecaheptayne-1,3,5,7,9,11,13 (hepta-acetylene), hexadecaoctatetrayne-1,3,5,7,9,12,13,15 (octa-acetylene), and eicosadecayne-1,3,5,7,9,11,13,15,17,19 (deca-acetylene) by various methods and authors are given in detail. The stability of the above acetylenes decreases with the increase of acetylenic groups in the polyacetylene chain. Their stability increasse with the substitution of the end hydrogen with alkyl or aryl radicals, and the size and configuration of the radical. Due to their specific reaction ability, the acetylynic hydrocarbons have a special place in organic chemistry. The electron structure of the acetylenic bond differs from the ethylene bond by the fact that Sigma bond is formed from 2 sp hybrid orbits. Nucleophylic reaction capability of acetylenic bond and the oxidation of acetylenic hydrogen is explained by

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ACCESSION NR: AP3001448

the asymmetric electronic distribution. A detailed description of the mechanisms and products is given covering the following reactions: hydrogen substitution; nucleophylic additions with CH sub 3 OH, HCN, ROH, CH(COOR) sub 2, CH sub 3 Li and H sub 2 O, (Alh sub 4) sup - and H sub 2 O, and the formation of cis- and trans isomers; electrophylic additions; radical reactions; catalytic hydration; and formation of cumulines (mesomeric structures) from poly-ynes. This paper also presents the synthesis of a series of macrocyclic compounds with conjugated acetylenic bonds obtained through oxidation with oxygen or oxygen with CuCl, or other oxidizers. The cyclic compounds are in the form of dimers, trimers tetramers, pentamers, hexamers, and even higher cyclic acetylenes. It was noted that in order to avoid the formation of a linear polymer the reaction must take place in a homogeneous solution. One of the best solutions was found to be pyridine and methanol mixture. The synthesis of polyacetylenes from bis-acetylenes by the oxidizing dehydropolycondensation was also studied. The oxident used in these reactions was oxygen which was used in conjunction with mono- or di- valent copper. Additional oxidation of the reaction mixture was attained with K sub 3 Fe(CN) sub 6 which resulted in the formation of poly-yne hydrocarbons. It must be noted that the use of strong oxidants such as HClO sub 4 results in the formation of coalescent structures. Dehydropolycondensation of acetylene with 9,10-diethynyl-9,10-dioxi-9,10-dihydroanthracene gives a soluble product. Oxidative dimerization of monopyridy-

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ACCESSION NR: AP3001448

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lacetylenes forms dipyridylpolyacetylenes. It was discovered that some synthesized polyacetylenes have a high photoelectric sensitivity in the modulated light. This discovery points to the approach of the possibility of synthesizing photosensitive polymers. Orig. art. has: 4 tables, 1 graph, and 1 figure.

ASSOCIATION: Institut elementoorganicheskikh soyedineniy akademii nauk SSSR (Institute of Organo-Elemental Compounds, Academy of Sciences SSSR)

SUBMITTED: 00 DATE ACQD: 12Jun63 ENCL: 01

SUB CODE: 00 NO REF SOV: 020 OTHER: 067

Card 4/4

KASATOCHKIN, V.I.; SLADKOV, A.M.; ASEYEV, Yu.G.; KUDRYAVTSEV, Yu.P.; YEGOROVA, O.I.; KORSHAK, V.V.

Infrared spectra of polyynes. Dokl. AN SSSR 153 no.2:346-349 N '63. (MIRA 16:12)

1. Institut goryuchikh iskopayemykh AN SSSR i Institut elementoorganicheskikh soyedineniy AN SSSR. 2. Chlen-korrespondent AN SSSR (for Korshak).

KUDRYAVTSEV, Yu.P.; SLADKOV, A.M.; KORSHAK, V.V.

Oxidizing polydehydrocondensation of p-diethynylbenzene and acetylene in the presence of p-substituted phenylacetylenes. Izv. AN SSSR. Ser. khim. no.10:1908 O '64. (MIRA 17:12)

1. Institut elemenoorganicheskikh soyedineniy AN SSSR.

SLADKOV, A.M., kand. khim. nauk; KUDRYAVTSEV, Yu.P.

Is a third form of carbon possible? Priroda 53 no.5:88-94 '64. (MIRA 17:5)

1. Institut elementoorganicheskikh soyedineniy AN SSSR, Moskva.

ACCESSION NR: AP4034542 S/0020/64/155/005/1140/1143

AUTHOR: Sladkov, A. M.; Korshak, V. V. (Corresponding member); Kudryavtsev, Yu. P.; Makhsumov, A. G.

TITLE: Synthesis of polyethers containing triple bonds in the chain.

SOURCE: AN SSSR. Doklady*, v. 155, no. 5, 1964, 1140-1143

TOPIC TAGS: polyether, synthesis, triple bond polyether, monopropargyl ether copolymer, dipropargyl ether copolymer, diethynylbenzene copolymer, unsaturated ether, electrophysical property, photoelectromotive force, conjugated polyene, IR spectra, acid polydehydrocondensation, conjugated triple bond , acetylenec ether polymer

ABSTRACT: Polyethers based on the acid condensation products of mono- and dipropargyl ethers with p-diethynylbenzene (DEB) were synthesized and their properties, especially their electrophysical properties, were studied. DEB was condensed under acid conditions with the dipropargyl ethers of 4,4-dihydroxydiphenyl, of 4,4-dihydroxydiphenyl-ol-2-propane, and of hexafluoro-2,2-bis-(4-hydroxyphenyl.)-propane, and the propargyl ethers of phenol, quinizarin and benzoic

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ACCESSION NR: AP4034542

acid. These unsaturated ethers were selected because their certain electrophysical properties, such as photoelectromotive force. The characteristic for conjugated polyenes were absent in these polymers. It was hoped that incorporating DEB in the chain of the polyether molecule would change its electrophysical properties. IR spectra of the products obtained showed the characteristic of the absorption bands for the acid polydehydrocondensation of DEB were preserved. From IR data and elementary analysis it is concluded that the generally insoluble polymers contained conjugated triple bonds alternated with the ether groups. "IR spectra were obtained in the INEOS AN SSSR laboratory by N. A. Chumayevsk, whom the authors sincerely thank." Orig. art. has: 4 figures and 2 tables.

ASSOCIATION: Institut elementoorganicheskikh soyedineniy Akademii nauk SSSR (Institute of Organometallic Compounds Academy of Sciences SSSR)

SUBMITTED: 29Oct63 DATE ACQ: 13May64 ENCL: 00

SUB CODE: OC NO REF SOV: 004 OTHER: 000

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